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10/646,196	08/22/2003	Yiliang Wu	D/A2543	9008

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EXAMINER	
ZEMEL, IRINA SOPHIA	
ART UNIT	**PAPER NUMBER**
1711	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,196	WU ET AL.	
	Examiner	Art Unit	
	Irina S. Zemel	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8-22-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6, 8- 20, and 23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, and 6-27 of U.S. Patent No. 6,777,529. Although the conflicting claims are not identical, they are not patentably distinct from each other because the A linking group is defined in the claims of the '529 patent as a divalent arylene group, and as such, encompasses the arylene units of formulas (III) of claim 1 of the instant application (which encompassed unsubstituted aryl compounds). Alkyl substituted arylene compounds as claimed, for example, in claims 9-are obvious from the genus of divalent arylene groups as homologues of unsubstituted arylenes represented, for example, by formulas 7-13 of claim 6 of the '529 patent.

Claims 1-6, 8- 20, and 23 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S.

Patent No. 6,770,904. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the same reasons set forth above for '529 patent. See claims 14 and 19 of '904 for definition of A linking groups.

Claims 1-6, 8- 20, and 23 and provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, and 6-26, and of copending Application No. 10/042,360. Although the conflicting claims are not identical, they are not patentably distinct from each other because linking group D is defined in the claims of the '529 patent as a divalent linkin group and is further defined as an aromatic group as per, for example, claim 3 (see all formulas in claim 3). As such, D linking group encompasses the arylene units of formulas (III) of claim 1 of the instant application. Alkyl substituted arylene compounds as claimed, for example, in claims 9-are obvious from the genus of divalent arylene groups as homologues of unsubstituted arylenes represented, for example, by formulas of claim 3 (or claim 25) of the '360 application.

This is a provisional obviousness-type double patenting rejection.

Claims 1-6, 8- 20, and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/874929. Although the conflicting claims are not identical, they are not patentably distinct from each other because the linking groups A (see definition of A in claim 6 of 929, for example) and unsubstituted compounds of formulas (III) (a and b equal 0) overlap with each other, and, thus would have been obvious over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-24 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/646398 in view of, for example, US aptent 6,445,126 to Arai et al (hereinafter "Arai"). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the co-pending application ' 398 claim an electronic device compriding a thiopolymer identical to the polymer claimed in the instant application. Thus, the claims of the instat application claiming the polymer are obvious over the device comprising identical polymer. It is well known to use thienylene or arylene containing polymer in electronic devices. Thus use of the claimed thienylene polymers in electronic devices as claimed in the '398 application would have been obvious.

Claims 1-6, 8- 20, and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 20-24 of copending Application No. 10/832, 504 in view of Arai. See ttwo-way obviousness reasons set forth above for Application No. 10/646398. See definition of linking group A in claim 20 of '504, for example.

This is a provisional obviousness-type double patenting rejection.

Claims 1-6, 8- 20, and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 and 20-25 of copending Application No. 10/832, 503 in view of Arai. See ttwo-way

obviousness reasons set forth above for Application No. 10/646398. See definition of linking group A in claim 20 of '503, for example.

This is a provisional obviousness-type double patenting rejection.

Claims 1-24 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35-41 of copending Application No. 10/231,841. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the same reasons as set forth above. See definition of D linkage in claim 37 of '841, for example.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-6, 8- 20, and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 6-37 of copending Application No. 10/042,342. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the same reasons set forth above. See definition of D linkage in claims 8 or 18, for example, or formulas in claim 28, for example.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

Claims 9 and 14 are of substantially the same scope. Canceling of either one of these claims is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1,2, 4-5, and 11-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, a and b are only defined as a "number", but the numerical value for the number is not defined. A "number" for the formulas (III) can be anywhere between 0 and 4. However, it is not clear from either the specification of the claims whether the defined formulas (III) intent to include unsubstituted aromatic units, i.e. when a and b are equal to 0. Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 2, 4, 5, 11, and 12 rejected under 35 U.S.C. 102(e or a) as being anticipated by US 2003/014466 to Ong et al., (hereinafter "Ong")

The reference discloses thienylene-arylene copolymers comprising substituted and unsubstituted 2,5-thienylene units and arylene units. See, for example, formulas 7-13 on pages 3-4. Applicants should note that as per claim 1, the numerical value for a and b is not specifically defines, thus the claims clearly reads of unsusbtituted arylene units, or a=b=0. Formula 7-13 include compounds with various aliphatic substituent for 2,5-thienylene units as defined by claim 4. However, while claim 4 and other claims (such as 12) define R substituent, these claims do NOT positively require the polymer to comprise substituted 2,5-thienylen units because those units are not positively claimed as present in the polymer and, as per claims 1, the polymer may contain either unit (I) OR (II). Furthermore, as discussed above, claim 1 does not define numerical value for a and b, thus encompassing unsusbtituted arylene groups. Claims defining R groups, but not further defining numerical value for a and b or specifically claiming a required arylene compound, such as claim 4 and 11, thus, do no limit the claims to the specifically claimed R groups and re met by unsusbtituted arylene groups.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 6, 9, 10, 13, 14, 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ong.

The disclosure of the Ong reference is discussed above. The reference does not explicitly disclose alkyl substituted arylenes, however, any alkyl substituted arylene units would have been obvious from the genus of arylene compounds and from explicitly exemplified (in the formula) unsubstituted arylene compounds because of their close structural similarity with expectation that alklyl substituted arylenes will have similar properties or differences in the properties would be expected homologue differences. See *In re Papesch*, 315 F.2d 381. Each of the claims listed above is directed to polumers comprising alkyl substituted arylene units (or has at least one formula within a claim with alkylene substituted arylenes only). Therefore, the invention as claimed in claims 3, 6, 9, 10, 13, 14, 16-23 would have been obvious from the disclosure of the Ong reference.

Claims 1-15 and 24 are rejected under 35 U.S.C. 103(a) as being obvious over US Patent 6,445,126 to Arai et al., (hereinafter "Arai").

The reference discloses polymers, such as described by formulas 4 and 5 in column 11. These polymers comprise units Ar4, Ar5 and Ar6. Each of the Ar4, Ar5 and Ar6 units is disclosed as an arylene group or divalent heterocyclic compounds in column 11, lines 23-25. The detailed description of suitable arylene and heterocyclic groups is given in column 10, lines 10-60 and explicitly includes substituted phenylenes dorresponding to the claimed units of formulas (III) and unsubstituted or substituted 2,5-thionylenes corresponding to the claimed units (I) and (II). The degree of substitution

for phenylene units may be from 1 to 4. Among substituents for the phenylene units, alkyl and alkoxy substituents are explicitly listed in column 10, lines 61-65 and column 11, lines 39-56. Applicants should note that none of the claims 1-15 and 24 explicitly requires the presen of substituted 2,5-thienyleunits, since the polymer may contain either units (I) or (II) as per claim 1, and none of the claims positively requires units represented by (II). Therefore, the reference explicitly discloses combinations that results in each of the units that correspond to the claimed units (i), (II), and (III). Choosing the combination of Ar4, Ar5 and Ar6 units that correspond to the claimed phenylene units and claimed 2,5-thyenylene units from the list that explicitly discloses such units would have been obvious for an ordinary artisan at the tine of the claimed invention with reasonable expectation of adequate results absent showing of unexpected results. The comparative results of the record do not provide probative evidence of unexpected results of the claimed polymers since the comparative experiment in the specification of the instant application provide results to a commercially available thionylene polymers and not the polymers disclosed in the Arai reference and containing substituted arylene units.

Therefore, the invention as claimed in claims 1-15 and 24 would have been obvious from the disclosure of Arai.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irina S. Zemel
Examiner
Art Unit 1711

ISZ